

SECTION 1

GENERAL GUIDANCE

1-1 **GENERAL.** This section provides general guidance on Department of Defense (DoD) policies and procedures for design and construction of Defense Medical Facilities, including medical and dental treatment facilities (MTF's), medical training facilities, medical research facilities, and veterinary treatment facilities in the Defense Medical Program. When feasible, this document is also to be utilized as criteria in the addition, alteration, or service upgrade to existing U.S. Military medical facilities funded by military departmental programs. Subject to the restrictions provided herein, applicability shall be limited only to those portions of such facilities, and/or the corresponding support services, specifically referenced by the project authorization document. It is the DoD objective to provide facilities that are responsive to the functional requirements of the using Military Department.

1-2 **APPLICABILITY.** This document sets forth DoD policy, procedures, and technical criteria for the design and construction of facilities in the Department of Defense Medical (DoDM) Military Construction (MILCON) program, and other medical design and construction projects over the UMC (Unspecified Minor Construction) threshold. When considered-feasible and economical by the services, the technical criteria in this document shall be the basis of design for Operations and Maintenance (O&M) or Repair and Maintenance (R&M) work, though the specific submittal and approval requirements may vary for those types of projects. In overseas locations where either Status of Forces Agreements (SOFA), local host country codes and standards, or other local circumstances may conflict with the criteria in this UFC, alternate design approaches shall be developed to achieve the intent of the criteria without compromising life safety or the safeguarding of persons and property. Conflicts shall be resolved at the Design Agent level, when the Design Agent's medical facilities design office or center of expertise determines that resolution does not represent a significant change to criteria affecting building occupant safety or health. All other proposed changes shall be coordinated through the Design Agent's medical office or center for submission to the Tricare Management Activity (TMA)

1-3 **POLICY.** As stated in the DoD Directive 6015.17 (reference 1j), it is DoD policy to design efficient, economical, and safe facilities, which sustain an effective combat force, that support the DoD medical wartime mission, and that meet the provisions of Title 10, United States Code (reference 1a). This document prescribes the DoD technical criteria and policy guidance for the design and construction of safe, functional, and durable facilities, which will have reasonable and appropriate maintenance and operations costs throughout their designed life. Detailed design criteria and procedures, which may be developed and issued by the DoD Components (Military Departments), shall be consistent with the policy statements and criteria contained herein and shall not deviate from these criteria without TMA/PPMD approval, as provided at 1-4.3. Facility designs shall:

1-3.1 meet the operating requirements of the using activity and provide reasonable flexibility to accommodate future changes.

1-3.2 provide functional facilities at the most economical and practicable life-cycle-cost.

1-3.3 be aesthetically compatible with the local environs and meet necessary environmental requirements including applicable federal, state, and local environmental standards and criteria. Necessary coordination shall be maintained with the state and local community in accordance with the requirements of E.O. 12372 (reference 1c).

1-4 **RESPONSIBILITIES.** The Office of the Assistant Secretary of Defense (Health Affairs), OASD(HA), Tricare Management Activity (TMA), Portfolio Planning and Management Division (PPMD) is responsible for the acquisition of all healthcare facilities worldwide including development and issuance of medical facility policy, planning, programming, budgeting, design and construction of all projects. TMA/PPMD is responsible for the development, issuance and maintenance of healthcare facilities planning and technical criteria and management of financial resources for all planning, design and construction of projects. TMA/PPMD is also responsible for the review of concept level designs described in Section 02 of this document, and to certify these designs in accordance with DoD Directives 5136.12 and 6015.17 (references 1d and 1j). The Design and Construction Agents may maintain supplementary technical criteria and will execute design and construction following established regulations and procedures unless otherwise directed by the TMA/PPMD. Design Agents will produce designs for a complete and useable facility within the approved programmed scope and programmed amount. The Military Departments, as the users, are responsible for all medical functional review and input during design. The Functional User's and the Service's Design Agent's responsibilities often overlap but do not supersede the respective medical and technical role of the other; the design of each facility must be a collaborative partnership. Specific responsibilities are addressed in various sections of this UFC.

1-4.1 **Responsible Office.** The Office of the Assistant Secretary of Defense (Health Affairs), OASD(HA), TMA/ PPMD is responsible for the general administrative management of this entire document, and has responsibility for the contents and development of criteria in collaboration with TMA/PPMD (See below).

1-4.2 **Healthcare Facilities Steering Committee (HFSC).** The HFSC acts as the clearance body for the technical contents of this document. This Committee is composed of members of TMA, the using Military Departments, and the Services design agents actively involved in the planning, programming, design, and construction of facilities. All proposed UFC-4-510-01 criteria updates and changes may be formally submitted to the Committee for evaluation. DD Form 1426 is provided for this purpose at the end of this UFC-4-510-01.

1-4.3 **Waivers.** TMA/ PPMD has the final authority to waive UFC-4-510-01 policy, procedures, or criteria including any deviations. Requests for project specific waivers to any portion of this document must be submitted in writing by the Design Agent, with full particulars and justification, and must be fully coordinated with the using Military Department.

1-4.4 **Design/Construction Agents.** Title 10, Section 2851 and DoD Directive 4270.5 assigns Design/Construction Agents, for certain geographical locations, responsibility for the execution of projects from receipt of a Design Authorization from TMA/PPMD through the completion of construction.

Design/Construction Agents are:

- a. The U. S. Army Corps of Engineers (USACE). The Headquarters, USACE, Defense Agencies and Support For Others Branch (CEMP-MD) is the primary USACE point of contact with TMA and is responsible for all program management issues. The USACE Medical Facilities Mandatory Center of Expertise and Standardization, Huntsville Engineering and Support Center (CEHNC-MX) is USACE's technical expert for medical design, with responsibility for concept design oversight, medical technical review of final designs, and medical design guidance, criteria, and standards.
- b. The Naval Facilities Engineering Command (NAVFAC). The NAVFAC Medical Facilities Design Office (MFDO) is the Navy's point of contact with TMA and technical expert for medical design and NAVFAC's final decision-making authority regarding technical guidance, criteria, and standards on all medical projects from initiation of project to beneficial occupancy of the building.
- c. The Air Force Civil Engineers (AF/A7CC). Air Force Civil Engineering Construction and Engineering Division is the primary point of contact with TMA in the United Kingdom.

1-5 **REFERENCED DOCUMENTS.** The DoD Directives, Instructions, and selected technical data, publications and standards (latest or most current editions) are referenced in the text by basic designation only and form a part of these criteria to the extent required by these references. Where references are made to MIL-HDBK-1190 (reference 1e), those referenced sections shall become an integral portion of this guidance.

1-6 **PREDESIGN CONSIDERATIONS.** Using Service shall fund and, in coordination with TMA/PPMD, prepare a Project Planning Package prior to the start of design. This package shall include the following documents and information, provided to TMA/PPMD by the Using Service in accordance with the DoD Medical Military Construction Timeline, Figure 2-1:

1-6.1 **DD Form 1391.** Describes the scope, cost, type of construction and rationale for the project.

1-6.2 **Project Narrative.** Summarizes the sizing decision process, siting, construction scenario, significant planning information and results.

1-6.3 **Economic Analysis (EA).** The Using Service will provide an economic

analysis as supporting justification of DOD medical projects with a cost over \$2 million as required by DoD Instruction 7041.3 and in accordance with guidance developed by TMA/PPMD. The Economic Analysis compares mission-based alternatives and identifies the most cost-effective capital investment.

1-6.4 Program for Design (PFD). Use the TMA/PPMD approved Program for Design (PFD) to allocate space assigned to a proposed facility. Modifications must be approved by TMA/PPMD. Include the estimated number of parking spaces as part of the Space Program.

1-6.5 Equipment Planning. The Using Service is responsible for preparing an equipment list for installed medical and dental equipment, and the associated budgeting, to support this requirement (MILCON) based on the Space and Equipment Planning System (SEPS). Equipment in Logistical category Codes E and F may be altered by the using Military Department if funding source requirements are not exceeded. Any increase in the funding for category Codes E and F equipment over the programmed amount of the project requires TMA/PPMD approval.

1-6.6 Project Book (PB). The PB summarizes existing site conditions and utilities, including the following minimum information.

- a. Completed site survey (Example format is provided in Figure 1-1), area maps, location maps, site location, site description (to include grades, gates, etc), style of architecture, construction season limitations, seismic, wind and snow considerations, SOFA, host country agreements, soil and foundation conditions, utility conditions (water, sewer, power, steam, electrical capacities and location), and site restrictions (airfield, AICUZ potential helipad approach/departure zone obstructions, flood land, rights-of-way, etc.), site security restrictions, the National Capital Planning Commission (NCPC).
- b. Utility availability, including water, sewage, storm drainage, electrical power, existing fuel sources, central heat or chilled water systems, including the tap-in locations. Also include the available capacities, power service characteristics and locations, electrical distribution, water and wastewater considerations.
- c. Environmental impact requirements, archaeological and historical considerations, explosive ordinance locations, contaminated soil (fuel, asbestos, etc.), coastal zone considerations, wetlands and watershed considerations, threatened and endangered species considerations, water quality, air quality, asbestos contamination, protection of natural resources information, and any other Environmental Protection Agency (EPA) or Occupational Safety and Health Administration (OSHA) considerations necessary which might impact the MILCON project.
- d. Force Protection/Security requirements including contingency considerations and statement by installation commander of designee identifying appropriate threat security level wherever minimal

requirements are exceeded.

- e. Contingency mode concept of operation where applicable.
- f. Fire protection considerations, such as accessibility and water supply.
- g. Communications Information or data systems, telephone and signal interface requirements for fire, police, etc., telephone switch capacities and line availability for MILCON project, Energy and Utility Monitoring and Control System (EMCS, UMCS) interface, master antenna, cable TV and closed circuit availability, computer interface, telecommunications and all other similar or useful information. (THE NEED TO ASSESS AND ADDRESS THE INFRASTRUCTURE FOR THE VARIOUS DIGITAL RADIOGRAPHY TECHNOLOGIES SHOULD BE ADDRESSED ALSO.)

1-6.7 **Addition-Alteration Facility Information.** For these projects, information is provided on the type and characteristics of existing construction, size of facility, condition of utilities and services, existence of significant known code or safety issues, and descriptions of previous alterations or additions of significance.

1-7 **DESIGN CONSIDERATIONS.**

1-7.1 **Economic Feasibility.** Project designs must be functional, aesthetically pleasing, and cost effective to acquire, maintain, and operate. The goal of every design is to provide the most functional, life-cycle cost-effective, maintainable, design possible within the available funds.

1-7.1.1 Cost estimates during design for building systems and casework shall be based on Figure 1-2. Logistical responsibility is explained in Section 15 and in the glossary.

1-7.2 **Planning Procedures for the National Capital Region (NCR).** Planning for all facilities in the NCR shall comply with MIL-HDBK-1190 (reference 1e) and OMB Circular A-11 (reference 3r). Master plans for facilities in the NCR shall be submitted to the National Capital Planning Commission (NCPC) or the Commission of Fine Arts (CFA), or both, as required by the policies issued by the Commissions. The NCR is defined as the District of Columbia; Prince Georges and Montgomery Counties in Maryland; Arlington, Fairfax, Loudoun and Prince William Counties in Virginia; and all cities and towns within the outer boundaries of the foregoing counties.

1-7.3 **Future Expansion.** Incorporate considerations for future expansion into all designs. Consider both external and internal expansion of vital functions such as ancillary and utility services. Building siting, vehicular access, structural systems, departmental adjacencies, functional layouts within departments, and utility type and source all play major roles in developing an economically expandable design. Provision for future vertical expansion is authorized when approved by TMA/PPMD.

1-7.4 **Construction Quality.** Facilities shall be designed and constructed to provide a well-built and enduring product at the lowest practicable life cycle cost.

Specific criteria for individual spaces are set forth in Appendix A. Materials used in design and construction of overseas projects shall be in character with materials, techniques, and methodologies used for similar structures in that country unless, in the opinion of TMA/ PPMD, the Design Agent and the using Military Department, U.S. standards should prevail.

1-7.5 **Environmental Quality.** Congressional and administrative guidance for general policies regarding environmental quality is provided in MIL-HDBK-1190 (reference 1e). Additionally, comply with all Service specific requirements for environmental quality.

1-7.6 **Fallout Protection.** Provide Fallout protection according to the policy guidance given in MIL-HDBK-1190, (reference 1e), and as directed by the TMA/PPMD, using Military Department and Design Agents.

1-7.7 **Antiterrorism and Force Protection (AT/FP).** All projects must comply with the Department of Defense Minimum Antiterrorism Standards for Buildings AT/FP (reference 1l) (UFC 4-010-01) or latest revision as established and released by the Department of Defense.

1-7.8 **Disposition of Excess Facilities.** Provide descriptive plan for the removal of excess facilities.

1-8 **IMPROVEMENT / ALTERATION OF EXISTING FACILITIES.** The criteria contained herein are not to be used as the sole justification for any addition, alterations or improvements to an existing facility. Rather these criteria define requirements that shall be met when improvement or alterations of existing facilities, or sub-portions or systems thereof, are specifically authorized by reference in the project document.

1-8.1 **Levels of Facility Alteration.** Categorize and estimate all costs associated with projects containing altered areas including the cost of temporary structures, if required, according to the following definitions:

1-8.1.1 Level 1 - Light alteration includes minor partition layout changes, new finish treatment, minor casework and equipment changes, minor modifications to Heating, Ventilation and Air Conditioning (HVAC) distribution systems, and minor electrical branch circuit changes. The estimated cost of this alteration should not exceed 30 percent of replacement cost for the same type of facility.

1-8.1.2 Level 2 - Medium alteration includes Level 1 changes, minor-to major partition layout changes with associated modifications to the HVAC distribution systems and electrical power and light requirements, minor structural modifications, new plumbing fixtures, allowances for roof repair, and changes in mechanical system insulation when asbestos is present. The estimated cost of this alteration should not exceed 50 percent of replacement cost for the same type of facility.

1-8.1.3 Level 3 - Heavy alteration includes Level 1 and 2 changes, gutting of the building to structural frame without demolishing floors, exterior walls and roof assembly,

modifications to structural frame, main electrical distribution system, air handling units and auxiliary equipment, plumbing system, and energy plant. The estimated cost of this alteration should not exceed 75 percent of replacement cost for the same type of facility.

1-8.1.4 Proposed alteration projects with a cost exceeding the 75 percent of replacement cost must be considered for a total replacement of the facility unless other restrictions make it an infeasible option.

1-8.2 **Interim Facilities.** The cost of interim facilities (temporary construction), if required, shall be included in the estimated cost for each of the above levels of alteration.

1-8.3 **Site Investigation.** Designers shall conduct thorough investigations of existing facilities to be upgraded or modified, in accordance with the conditions of their design contracts, to become knowledgeable of facility conditions. This includes the need to inspect concealed spaces (above-ceiling areas, chases, and equipment rooms, for example), to permit evaluation and accurate depiction of as-built conditions. Design agents are responsible to assure that the scope of work for each design contract describes this designer responsibility. Generally, designers should be required to directly inspect all equipment rooms and all above-ceiling areas in enough locations as to reasonably establish the existing conditions in all major areas and departments, and on each floor, of a given project facility. In facilities with "hard" ceilings, this may require the creation of inspection openings, and the need to establish in the Scope of Work the responsibility for making and repairing these openings. The design team must recognize the economic advantages of a detailed designer site investigation: if the designers do not verify conditions, the construction contractor must do so, normally at a cost premium reflected in higher bidding costs (unknown conditions) and change orders (changed conditions).

1-8.4 **Modifications to Existing Systems.** Modifications to existing equipment and systems, including temporary connections, changes to system performance, or measures necessary to sustain service, shall be shown and described in detail in project design documents. Designers shall evaluate the impact on existing systems of "tap-ins" which increase overall system demand. The locations of new connections shall clearly be shown and/or described. The designer shall determine, and document for the design agent's information, any project work that will necessitate a reduction or interruption of any service to an existing, occupied area.

1-8.5 **Protection of Patients from Construction Contaminants.** For additions or alterations to existing hospitals, design projects shall include instructions (including specifications, drawings, drawing notes, and details, as applicable) defining measures required of the construction-contractors to minimize contamination of the existing medical facility. Measures to reduce the potential of contamination and nosocomial infections include but are not limited to negative isolation of construction areas, construction of effective dust barriers, protection of air distribution systems serving occupied areas, maintenance of adequate hand washing stations, and disinfection of any reused ductwork. Designers should consult with the facility's infection control representative and facility management during the design process to assure thorough

coordination of design features that may affect patient welfare.

1-8.6 Construction Phasing Plan. The development of construction phasing plays a role in the construction of new medical facilities and definitely plays a major role in renovated medical facilities. The designer shall provide at a minimum, one workable phasing plan that will accommodate all major construction elements and owner impacts outside of what would be considered normal or industry established construction sequence of work. Along with major construction elements the procurement of major medical equipment shall be considered in the development of the phasing plan. Provide a narrative and graphic node diagram showing the major construction elements, relationships, and restraints. The node diagram shall not be time scaled. Site, architectural and utility plans shall accompany the narrative and diagram to delineate the boundaries of all areas within and affected by a particular phase. The duration of Government activities and impacts shall be determined and identified. The designer shall also determine the overall duration of the project but the duration of individual phases shall not be indicated.

1-8.7 Incremental Systems Testing/Placement in Service. Designers shall describe the procedures required to perform pre-acceptance equipment testing, functional system testing, and certification of satisfactory operation for systems constructed in an incremental or segmental fashion. An example of such a case might be a medical gas system upgrade to an existing facility, constructed and placed into operation incrementally on a department-by-department or floor-by-floor basis. Similar procedures shall be provided for existing systems, which are incrementally taken out of service.

1-8.8 Seismic Upgrades.

1-8.8.1 Policy. The Department of Defense policy is to provide a framework to make the most effective use of medical Military Construction (MILCON) funds and to accommodate the concerns and legal requirements associated with the seismic risks faced by military hospitals. The Earthquake Hazards Reduction Act (P.L. 95-124), (reference 1i) and the National Earthquake Hazards Reduction Program, while indicating the need to ensure that critical facilities such as hospitals are serviceable following an earthquake, also recognizes that the measures necessary to implement seismic requirements are extremely expensive.

1-8.8.2 Corrective Actions. When existing facilities having seismic deficiencies are being programmed, the seismic problem will be considered along with all other factors used in developing the requirement for a construction project. When programming existing facilities that are located in areas of seismic vulnerability, a seismic evaluation of the facility will be done early in the project development process so that rehabilitation funds, if needed, could be programmed prior to project authorization. The corrective measures planned must address all factors including earthquake safety, be consistent with system wide priorities, and be undertaken in a reasonable manner.

1-8.9 Types of Medical Facility Upgrade Surveys. Facility deficiency

tabulation and upgrade surveys will be funded by the Military Department and based on the following guidance. The Using Service will provide the design agent a completed Checklist for Medical Facility Upgrade Survey Figure 1-3 to establish the scope of facility upgrade survey projects.

1-8.9.1 Basic Life Safety Survey. Facility is surveyed for compliance with: NFPA 101 (reference 1f), Chapter 13, "Existing Health Care Occupancies"; and part of NFPA 99 (reference 1g), Chapter 3, "Electrical Systems". This type survey only addresses the basic life safety and fire safety issues covered in NFPA 101, Chapter 13 and NFPA 99, Chapter 3 including: means of egress; protection; detection, alarm, and communication systems; building services; and essential electrical systems. The scope of this type survey is limited by using the exception allowed in NFPA 101, paragraph 7-1.2, so that the survey will not evaluate general compliance with other referenced NFPA Standards. However, the scope is extended to include the Life Safety Branch of the essential electrical system in accordance with NFPA 99, Chapter 3, because the condition of the life safety branch is vital to basic life safety in health care facilities. The end product of this survey is a limited "Deficiency Tabulation Report" that: identifies and prioritizes the deficiencies; proposes corrective solutions; and provides a cost estimate for corrections.

1-8.9.2 Life Safety and Utility Systems Survey. In addition to the requirements of the "Basic Life Safety Survey" this type of survey also includes evaluation of the capacity and condition of building utility and support systems in relation to UFC-4-510-01 and using military department criteria. The end result of this survey is a "Deficiency Tabulation Report" that: identifies and prioritizes the deficiencies; proposes corrective solutions; and provides a cost estimate for corrections. This type of survey could include: electrical systems including compliance with NFPA 70, "National Electrical Code" (reference 1h); communication and signal systems; heating, ventilating, and air conditioning systems; plumbing and medical gas systems; and transportation systems.

1-8.9.3 Facility Modernization Survey. In addition to the requirements for the "Life Safety and Utility Systems Survey," this survey provides a complete evaluation of the functional and facility deficiencies in relation to UFC-4-510-01 and using military department criteria. The end result of this survey is a proposed program and cost estimate to correct the functional, architectural, and engineering deficiencies to dramatically extend the useful life of a facility. This type of survey could include: functionality, medical equipment, building systems, architectural finishes, mechanical, plumbing, electrical, communication, fire and life safety, and transportation systems.

1-8.9.4 Special Studies. Any of the surveys described above could include special studies where required for a specific facility. The more common types of special studies include:

- a. Economic Analysis - New vs. add/alt construction vs. lease, etc.
(Required for all projects with a projected cost of \$2 million or more.)
- b. Seismic/structural.
- c. Hazardous/Toxic Substances - Asbestos, PCB's, Lead in paint or in potable water, mercury contamination, etc.

- d. Maintenance and Repair Deficiencies.
- e. Americans with Disabilities Act and Architectural Barriers Act Accessibility Guidelines.

1-9 **TYPES OF CONSTRUCTION.** Construction levels and building types are outlined in MIL-HDBK-1190, Chapter 1 (reference 1e).

1-10. **TOTAL BUILDING COMMISSIONING.** Commissioning is defined by the building industry as the process of verifying that all building systems perform interactively according to the design intent, and the systems meet the Owner's operational needs. Implementation of commissioning for a complex medical facility requires a higher level of comprehensive oversight of both the design and construction process. Typical of the building systems/system interfaces found in the larger MTFs, which may require Total Building Commissioning, are the following:

- Complex HVAC systems, including electronic digital control systems.
- Medical and Dental gas, compressed air, and vacuum systems.
- High pressure steam, clean steam, and other major energy plant equipment.
- Emergency Power systems, and their interfaces to other critical building system operations.
- Fire detection and alarm systems, and their interfaces to other critical building system components.
- Electronic communications systems including voice and data transmission, nurse call, closed circuit TV, and others.
- Building systems, which are incrementally constructed and commissioned, such as in, phased construction projects.
- Critical envelope elements in severe climactic regions.

On a project by project basis, the Design/Construction Agent and Owner must determine in concert the extent and level of services required during project design and construction to achieve Total Building Commissioning. The Design/Construction Agent is responsible for the implementation of the Total Building Commissioning Process. Additional reference publications, which describe the Commissioning Process, are provided at references 1k, and 1l.

1-10.1 **Commissioning During Design.** For each project, design documents must be developed to adequately define functional testing procedures and operator training for building systems and their operational interfaces. Documentation must define the hardware needed to facilitate testing, requirements for testing instrumentation, the qualifications of testing personnel, and the required documentation of test results. The more complex the project and its supporting systems, the more complex the functional testing requirements become and the greater the expertise required to develop, and review for QA purposes, this documentation. Documentation

for simpler projects and systems are more easily adapted from guide specifications and criteria guidance. Adequate design commissioning for almost all facilities associated with patient treatment mandates the involvement of the Agent's Medical Specialized Design Office or Center. For larger inpatient clinics, ambulatory surgery, and full service hospitals and medical centers, and in particular for projects involving additions and alterations, the commissioning effort may include designer and/or QA involvement by experts in systems commissioning and maintenance.

1-10.2. Commissioning During Construction. During the construction project, it is necessary for the Agent to assure that the contractor's proposed testing procedures, personnel, and instrumentation fully meet the design document requirements and that the tests are properly conducted and results documented. For complex or high cost equipment and system shop drawing submissions, review by the original designer may be required to assure compliance with design intent, particularly when deviations from the original design are proposed by the construction contractor. For the more complex or medically unique systems, proposed testing procedures should be reviewed by technical personnel experienced in such systems commissioning, and who report directly to the Construction Agent. These personnel should also provide QA inspection or oversight of the contractor's functional testing, test documentation, operating and maintenance materials, and operator training.

1-11 PARKING FACILITIES. Parking design should be selected based on minimum use of land for maximum number of spaces for both organizational and non-organizational vehicles. Parking areas should be coordinated with the location of underground utility services. In the interest of economy and efficiency of land use, joint use parking may be considered where feasible. Where relatively large parking lots are unavoidable, natural terrain features and allocation of natural tree islands should be combined effectively to relieve the unfavorable view without jeopardizing the snow removal functions where applicable. When mature trees or vegetation exist on a site, every reasonable effort should be used to integrate them into the parking areas. Criteria and allowances for parking spaces for non-organizational vehicles shall be in accordance with Table 1-1 (reference 1n).

1-11.1 Parking Structures. Parking structures or garages will be considered when the site is too small to accommodate required parking, the value of the land is excessive, the site is located in a harsh climate, or the required amount of parking spaces creates an oversized area with extreme walking distances. TMA/PPMD will approve parking structures on a case-by-case basis.

Table 1-1. Required Parking Spaces for Medical and Dental Treatment Facilities

$$\text{Number of Parking Spaces Required} = (.75)(X1) + (.40)(X2) + (X3) + (X4)$$

- X1 = All personnel working in the Healthcare Facility on a full-time basis, plus an allowance for visitors and part-time staff. Include FTE's, contract maintenance, Red Cross volunteers, base exchange, clergy, interns, technical school trainees, Veterans Affairs and other Military Department liaison staff, Reserve, Guard, PME and visitors (i.e. Commander, CHAMPUS, RMO Security, Fire Department consultants, Salespersons, etc.) and shift change overlap. (Use 10 percent if statistics are unavailable for additional visitors, shift overlap, and part-time staff).
- X2 = For hospitals and dental facilities, use average daily outpatient workload for "peak month" using 21 workdays per month and 250 workdays per year as a basis for calculation. Workload to be used in calculation is all outpatient visits to clinics plus outpatient O.T., P.T., immunizations, physical exams, inhalation therapy, EEG's, ECG's plus a 10 percent factor for pre-admission testing and paperwork, pharmacy visits (including refills), environmental health, records retrieval, partnership program visits, education programs (birthing, smoking cessation, nutrition), "drop-in" check-ups, school physicals, appointments, DEERS checks, meeting with family members in conjunction with a facility "visit", etc. For ambulatory and outpatient clinics, include average daily outpatient surgical workload for "peak month" using 21 workdays per month and 250 workdays per year as a basis for calculation.
- X3 = One space for each In-patient bed.
- X4 = One space for each organizational vehicle.

Notes:

1. This formula should be used as a guide. Additional parking spaces need to be justified.
2. Carpooling, "Reserved" spaces for Command, General Officers, Rewards, and Disabled are included in the above factors.
3. Spaces for Disabled are included in and broken out from the above total and must be allocated per Section 11: Provisions for the Disabled, for both inpatient and outpatient requirements as applicable.
4. Calculations may be adjusted for public transportation (if reliable and available within reasonable walking distance) and for Quarters/Housing (if within reasonable walking distance).
5. Parking lot segregation for staff, patients and visitors will be addressed by using Military Departments during design.

REFERENCES

- 1a. Title 10, United States Code (USC).
- 1b. DoD Directive 6000.12, Health Services Operations and Readiness, latest edition.
- 1c. Executive Order 12372, "Intergovernmental Review of Federal Programs", latest edition.
- 1d. DoD Directive 5136.12, "Tricare Management Activity (TMA)," latest edition.
- 1e. MIL-HDBK-1190, "Facility Planning and Design Guide".
- 1f. NFPA 101, "Life Safety Code."
- 1g. NFPA 99, "Health Care Facilities Handbook."
- 1h. NFPA 70, "National Electric Code."
- 1i. P.L. 95-124, "Earthquake Hazards Reduction Act"
- 1j. DoD Instruction 6015.17, "Planning and Acquisition of Military Health Facilities", latest edition.
- 1k. United States Army Corps of Engineers (USACE) ER 1110-345-723, Systems Commissioning Procedures, latest edition.
- 1l. ASHRAE Guideline 0-2005, The Commissioning Process, latest edition
- 1m. UFC 4-010-01, "Department of Defense Minimum Antiterrorism Standards for Buildings" latest edition.
- 1n. MTMC Report 74-28, "Traffic Generations at Military Medical Facilities", Military Traffic Management Command Transportation Engineering Agency, latest edition.

Figure 1-1. Site Checklist

PROJECT NAME: _____ DATE: _____

PROJECT LOCATION: _____

1. ARE ROADS TO SITE ADEQUATE? Y or N
2. IS SITE IN FLOODPLAIN? Y or N
3. WHAT IS PROJECT TYPE? NEW or ADDITION/ALTERATION
4. IS THERE ANY ASBESTOS? Y or N
5. ARE THERE ANY OTHER CONTAMINATION OR SAFETY HAZARDS? Y or N
TYPE: _____
6. ARE THERE ANY HISTORICAL STRUCTURES ON OR ADJACENT TO SITE?
Y or N
7. SEISMIC CATEGORY OF SITE? A B C D E F
8. IS THERE ANY EXPANSIVE SOIL AT THIS SITE? Y or N
9. WHAT IS THE GENERAL BEARING STRATA DEPTH IN THIS AREA?
10. ARE SPECIAL FOUNDATIONS REQUIRED? NONE PIERS MAT PILES
OTHER: _____
11. WHAT IS WATER TABLE LEVEL AT THIS SITE?
12. IS NOISE A PROBLEM? Y or N IF Y, WHAT IS NC-LEVEL?
13. ARE THERE ANY EXISTING STRUCTURES TO BE DEMOLISHED? Y or N
14. DO ANY DISPLACED FUNCTIONS NEED TO BE REPLACED? N/A, Y or N
IF YES, WHAT ARE THEY? _____
15. DO ANY EASEMENTS CROSS THE PROPERTY? Y or N
IF YES, WHAT ARE THEY?
16. WHAT IS BASIC SIZE AND SHAPE OF SITE?
17. WHAT IS SLOPE OF SITE? LEVEL 3-8% 9-15% 16-25% >25%
18. IS THERE ANY SIGNIFICANT VEGETATION? Y or N
19. WHAT IS THE PREVAILING WIND DIRECTION?

Figure 1-1 (Continued)

20. WHAT IS AVERAGE ANNUAL RAINFALL? _____ INCHES

21. WHAT IS AVERAGE ANNUAL SNOWFALL? _____ INCHES

22. WHAT ARE THE CLIMATIC CONDITIONS? WIN DB _____ SUM DB _____ WB

23. DOES WATER SUPPLY NEED TO BE TREATED? Y or N

24. WHAT IS THE AVAILABILITY OF UTILITIES TO THE SITE?

SYSTEM	DISTANCE TO CONNECTION POINT	CAPACITY TO SITE	AVAILABLE
WATER	_____ FEET	_____ GPM	_____ PSI
FIRE WATER	_____ FEET	_____ GPM	_____ PSI
CLEAN STEAM	_____ FEET	_____ #/HR	_____ PSI
UNTREATED STEAM	_____ FEET	_____ #/HR	_____ PSI
HI-TEMP HOT WATER	_____ FEET	_____ GPM	_____ TEMP
CHILLED WATER	_____ FEET	_____ GPM	_____ TEMP
SANITARY SEWER	_____ FEET	_____ GPM	
STORM SEWER	_____ FEET	_____ GPM	
GAS	_____ FEET	_____ GPM	_____ CFM
ELECTRICAL-Primary	_____ FEET	_____ KVA	_____ KILOVOLT
ELECTRICAL-Alternate	_____ FEET	_____ KVA	_____ KILOVOLT
CABLE TV	_____ FEET		
FIBER OPTIC LINE	_____ FEET		
COMMUNICATIONS	_____ FEET	_____ SWITCH CAPACITY	
REGULATED WASTE	_____ FEET	_____ #/DAY	

25. WHAT IS THE FREQUENCY OF LIGHTNING?

26. Is the site coordinated with the installation and tied into the installation Master Plan?

27. Has the history of the site been researched and investigated at least fifty years prior?

Figure 1-1 (Continued)

28. ADDITIONAL REMARKS: (Add additional pages if necessary):

CERTIFICATION OFFICIAL:

NAME:

TITLE:

ORGANIZATION:

SIGNATURE:

Figure 1-2. Logistical Responsibility for Building Systems

Special Instructions. The items listed in this section shall be included in construction cost estimates as appropriate.

ITEM -----	Logistical Responsibility ⁽¹⁾
BUILDING AND GROUNDS	
Hospital buildings (including administration)	A
Medical Clinic buildings	A
Dental Clinic buildings	A
Clinical and Medical Research Laboratory buildings	A
Animal holding buildings	A
Maintenance shop buildings	A
Garages and automotive shelters	A
Power plant buildings (steam and/or electrical)	A
Sewage disposal plant structures	A
Medical helicopter/air evac landing pads	A
Chapel	A
Recreational building (including Red Cross, gymnasiums and swimming pools)	A
Recreational fields (including tennis courts, baseball diamonds, etc.)	A
Guard and sentry boxes, gate houses	A
Incinerator buildings	A
ELECTRICAL SERVICE	
Wiring (including material)	A
Conduits	A
Switches, panels boxes, service outlets	A
Transformers (step-down and distribution)	A
Lighting, fixtures (including initial lamping)	A
Generating equipment (including emergency)	A
Explosion-proof fixtures	A
Power conditioning/surge protectors	A
HEATING, AIR CONDITIONING, AND VENTILATION	
Air conditioning (including packaged units)	A
Boiler plants and water heaters	A
Heat and steam distribution systems	A
Central vacuum cleaning system	A

⁽¹⁾ See Para 16.2.1 for definition.

ITEM

Logistical Responsibility⁽¹⁾**PLUMBING**

Piping valves, fittings, and outlets	A
Toilet, bath, and lavatory fixtures (including shower stalls, mirrors, towel racks, toilet paper dispensers, paper towel dispensers, soap dispensers, and bed pan washers)	A
Sewer systems and plants	A
Gas, air pressure and suction, and medical gas systems	A
Automatic sprinkler systems	A
Fire protection system (water)	A

REFRIGERATION

Refrigeration (walk-in)	A
Deep freeze (walk-in)	A
Built-in morgue refrigerators	A

COMMUNICATIONS

LAN - Local Area Network:	
Conduit, Boxes, Wiring, Patch panels, outlets	A
LAN Equipment	C
Telephone System, Complete:	
Interior Conduits, Boxes, Outlets, Wiring	A
Outside cable and support work	A
Interior Telephone Switching Equipment	A
Supporting Expansion Work at Main Exchange	A
Instruments	C
Intercom systems, Complete:	
Conduits, Boxes, Wiring, and Equipment	A
Public Address System, Complete:	
Conduits, Boxes, Wiring, and Equipment	A
Patient Physiological Monitoring:	
Conduits, Boxes, Blank Outlets	A
Equipment	C
Staff Radio Paging Systems, Complete:	
Conduits, Boxes, Wiring, Equipment	A

ITEM

Logistical Responsibility⁽¹⁾

COMMUNICATIONS - (Continued)

Other Radio Systems, i.e., EMS, etc.:
 Conduits, Boxes, Site Support Work
 Antennas, Equipment, and Wiring

A

C

Card Access System, Complete:
 Conduits, Boxes, Wiring, Equipment

A

Nurses' Call Systems, Complete:
 Conduits, Boxes, Wiring, Equipment

A

Central Dictating System:
 Conduits, Boxes, Wiring, Outlets
 Dictation Equipment

A

C

Intrusion detection System:
 Conduits, Boxes, Blank Outlets
 Wiring, Sensors and Control Equipment

A

A

Fire Detection and Alarm System, Complete

A

Clock Systems:-
 Central Clock System, Complete
 Battery Clocks

A

C

TRANSPORTATION SYSTEM

A

SIGNAGE (INTERNAL/EXTERNAL)

A

A. Types of Survey

b. NFPA 99, Chapter 3, "Electrical Systems" as it relates to Essential Electrical System - Life Safety Branch only.

b. The building utility systems will be surveyed in relation to: UFC 4-510-01, "DoD Medical and Dental Treatment Facilities Design and Construction Criteria"; and Military Department Criteria. The following systems will be addressed:

YES NO Electrical systems.

YES NO Communication and signal systems.

YES NO HVAC.

YES NO Plumbing.

YES NO Medical gas systems.

YES NO Transportation and material handling systems.

YES NO Other. Provide list.

[illegible]

Figure 1-3 (Continued)

(Select one "Type of Survey" and any "Special Studies" required)

YES NO **3. Facility Modernization Survey.** Survey will address compliance with the following standards:

a. NFPA 101, Chapter 13, "Existing Health Care Occupancies" including general compliance with referenced standards per NFPA 101, paragraph 7-1.2.

b. The building will be surveyed in relation to: UFC 4-510-01, and Military Department Criteria. The following systems will be addressed:

YES	NO	Site and Parking issues.
YES	NO	Utility services.
YES	NO	Structure.
YES	NO	Exterior Finishes, roofing, glazing, etc.
YES	NO	Medical/Functional Requirements.
YES	NO	Architectural finishes.
YES	NO	Equipment and Furnishings
YES	NO	Waste Management System.
YES	NO	Transportation and material handling systems.
YES	NO	Electrical systems.
YES	NO	Communication and signal systems.
YES	NO	Energy Usage/System Efficiency Survey.
YES	NO	HVAC.
YES	NO	Plumbing.
YES	NO	Medical gas systems.
YES	NO	Other. Provide list.

B. Special Studies

YES NO Economic Analysis. (Attach scope of analysis).

YES NO Seismic/structural evaluation.

YES NO Hazardous/Toxic substance survey.

_____ Asbestos survey

_____ PCB survey

_____ Lead survey (in paint or in potable water)

_____ Mercury contamination

_____ Underground Fuel Tank Survey.

_____ Other. Provide list, _____.

YES NO Maintenance and Repair Deficiency survey.

YES NO Americans with Disabilities Act and Architectural Barriers Act
Accessibility Guidelines.

Accessibility Guidelines Compliance.

YES NO Other. Provide list. _____.